Thank you for purchasing our product. We hope this user-friendly device will be helpful in realising your ideas and bringing comfort to your life. Please take few minutes to read this manual before starting to work with *VRT012* . This would make the installation and use of device easier.

INTRODUCTION

VRT012 is a very simple device which can be used for authorised door access, controlling gates, switching of remote equipments, car parking systems, activate/deactivate alarm systems and etc. Basically this device can be used in places which require ON/OFF switching action. This ON/OFF functionality of *VRT012* can be achieved by making a phone call.

Whenever a person calls *VRT012* , the device compares the phone number of incoming call with the numbers stored in the memory of device. If a match is found, it means the caller is an authorized person. Due to this *VRT012* will turn ON its' output, in short, sending a signal to activate the connected device. *VRT012* does not have any answer function; therefore, the calling person does not have to pay any charges for the call.

Up to 500 different numbers can be stored in the memory of device.

Once *VRT012* turns the output ON, there are two ways in which the output can be turned OFF,

a) Relay timeout: You can choose the time for which the output should be ON. Once this timer expires the output will be turned OFF.

b) External input: *VRT012* has one digital input. When a logically high signal is given to this input the output will be turned OFF. For giving a high signal switch or sensor can be connected.

VRT012 can be configured in two ways,

a) By sending an SMS

b) By connecting the device to a PC using COM port interface and the *VRT012* configuration software.

PACKAGE CONTENTS

- Cardboard box.
- Device *VRT012* .
- CD (including the required information and software.)
- Configuration cable for connection between the device and personal computer
- GSM antenna.
- Quick start guide

Note: The package does not include any SIM card. The SIM card must be acquired from your GSM service supplier.

If any part from the package is missing, please contact your local dealer, seller or the business representative.

TECHNICAL CHARACTERISTICS

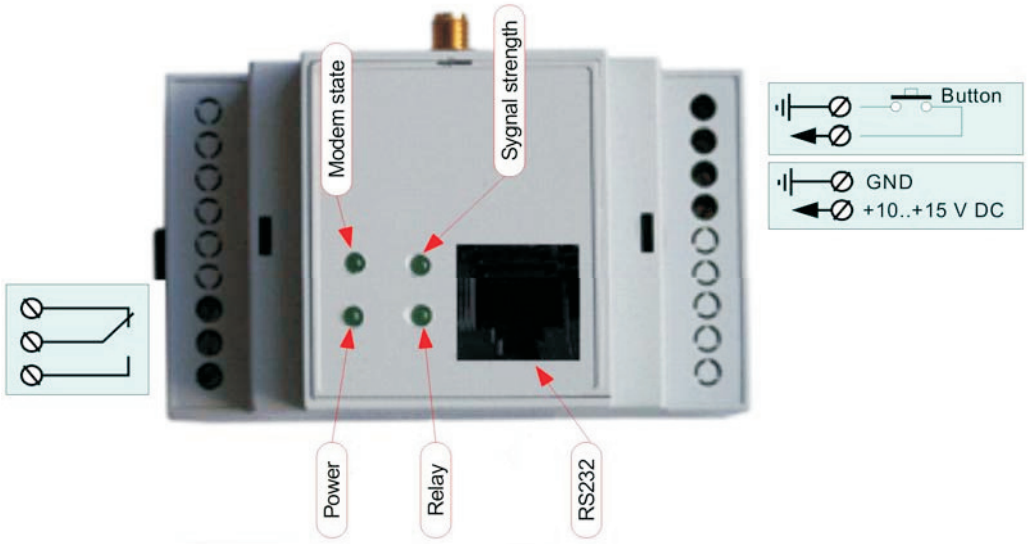
Power Supply Voltage..... 10-15 V
Average Power consumption..... 2 W
Operating Temperature..... -20...+40C
Maximum Switching Current..... 5 A
Maximum Switching Voltage..... 220V

Picture 1. External view and measurements of the device

DESCRIPTION OF THE DEVICE AND PRINCIPLES OF FUNCTIONING

The device *VRT012* consists of a microcontroller and GSM modem.
The microcontroller receives and processes signals.

There are 4 light diodes on the external board of the device as shown in picture 2.



Picture 2. Device *VRT012*

The light diode *Power* is directly connected to the Power supply chain of the microcontroller.

The light diode *Modem State* is connected to the GSM modem and its status depends on the operation logic of the GSM modem and its specifications.

The light diodes *Relay* and *Signal Strength* are connected to the microcontroller and reflect the status of the device.

The light diode *Relay* reflects the signal status of activating the internal relay. When the relay is activated, the light diode is also on.

The light diode *Signal Strength* reflects the Power of the signal received via the GSM modem.

When the Power is supplied, the light diodes *Relay* and *Signal Strength* reflect the start of activating the programme and its various stages. If the connection is correct, the light diodes are flashing alternately as specified in the table below, and when the operation status is activated, they are operating in accordance to their main functions.

When the Power is supplied, the device checks the whole internal data base of numbers and operation of the memory chip.

If there is a memory error, the device would not switch to operation mode and 2 pulses would be emitted by alternately by the light diode Signal Strength.

If the GSM modem is not functioning, the device would not switch to operation mode and uninterrupted swift short pulses would be emitted by the light diode Signal Strength.

In the device, the whole internal data base of numbers is being checked by checking the control counting (CRC). If the control counting does not match, the device would rewrite all settings back to manufacturer's values:

- The setting of switching off the signal is replaced by switching off on receiving an e•ternal signal .
- The time for switching off the relay is set at 5 sec. However, it is not being used.
- The data base of numbers is deleted.

When the device is operating, it is possible to connect a personal computer and do the configuration. In addition, when data is being transmitted from the device to the personal computer and vice versa, it does not respond to calls and SMS messages.

MAKING THE DEVICE READY FOR WORK

After purchasing the device it needs to be configured, i. e. the list of numbers which the device would respond to must be recorded in the memory as well as the parameters of the switching-on signal of the operating device.

When the device is switched on for the first time, its data base of numbers is empty. The device must be configured by a personal computer and a programme since the configuration command by SMS messages may be received only from numbers which are already available in the data base.

Note: The configuration can be done after the device is bought or at a later stage, when the device has been prepared for use.

The device is fi•ed onto DIN board and connected as shown in the labelling on the body.

Before using the device, insert a SIM card with an unlocked PIN code check. PIN code check may be unlocked by any mobile phone or other appropriate device. For more comprehensive information, please refer to the internet service provider, the owner of the SIM card.

Picture 3. Inserting SIM card

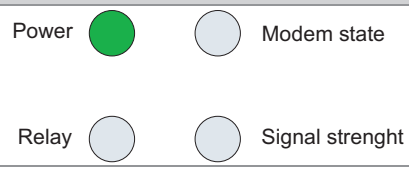
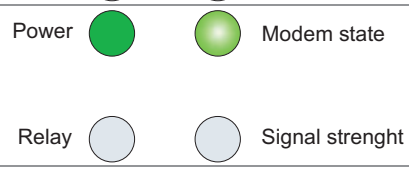
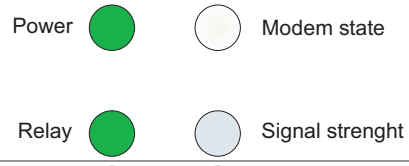
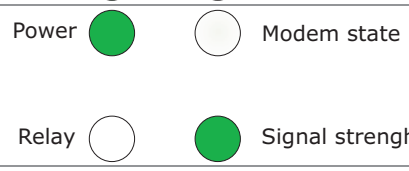
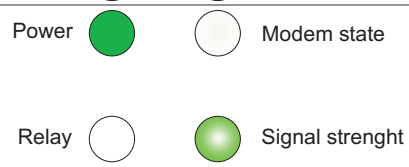
Note: the SIM card may only be inserted while the power supply of the device is unplugged.

After the device is switched on and configured, it is ready for use.

When the device is turned on for the first time, please see if it is properly switched on.

One only needs to watch the signals of the light diodes: if the device is switched on properly, the signals of the light diodes would be activated as specified in the table.

Table 1. Boot stage sequences

Turn-by-turn signals of light diodes	**Description of the status**
	Light diode *Power* is turned on and starts shining without interruptions.
	The light diode *Modem State* begins flashing to reflect the operation of the GSM modem.
	Light diodes *Relay* and *Signal Strength* are flashing by turns. This status lasts as long as the modem is in progress of being connected to the operator's network.
	
	When the modem has been connected to the operator's network, the light diode *Relay* stops flashing and the light diode *Signal Strength* starts flashing to reflect the Power of the signal being received. The light diode is pulsing, and the quantity of pulses refers to the Power of the signal. One pulse refers to the lowest signal, 7 pulses refer o the highest signal.

When the device reaches the last stage specified in the table, it is ready for use.

CONFIGURATION BY MEANS OF SMS MESSAGES

Note: the device will not respond to SMS that contains configuration commands, unless senders phone number is entered to 0th position in internal database of phone numbers

The device is able to receive 3 types of command messages:

1. Recording a number in the data base of numbers
2. Recording the time of the delayed switching-on-the-relay signal
3. Recording the status of receiving an external switching-off-the-relay signal

SMS message containing a command for recording a number is as follows:

P#nnn=xxxxxxx;

The symbol "**P**" should be in the first position, instead of **nnn** there must be a number to be recorded in the device memory, **xxxxxxx** means a recorded phone number which the device would respond to.

Example:

P#1=+37069854788; - this message means that the number +37069854788 must be recorded in the first (1) position.

SMS message containing a command for recording the time of the delay of the relay is as follows:

PRTIMT=xxxxx;
The symbol "**P**" should be in the first position, **xxxxx** means the recorded time in miliseconds within which the relay would be delayed.

Example:

PRTIMT =5000; this message means that the relay must be delayed for 5 seconds after switching on.

SMS message containing a command for recording the altered status of receiving an external signal is as follows:

PSEN=x;
The symbol "**P**" should be in the first position, **x** may mean 0 or 1.
0 means that it is impossible to receive the signal, 1 means that the device would switch off the relay only after the external signal has been received.

Example:

PSEN =1; means that the relay must be switched off only when the lower level of the reception of the external signal has been indicated.

One SMS message may contain several messages containing commands, and the messages must be separated by the symbol "**;**".

Example:

P#1=+37069854788**;**#2=+37069854789**;**RTIMT=5000**;**SEN=1;

This message means that the number +37069854788 should be recorded in the 1 (first) position and the number +37069854789 in the 2 (second) position, the relay must be delayed for 5 seconds after switching on and switching off is done after the transmission of the external signal only.
There should be no unnecessary symbols or intervals in the message.

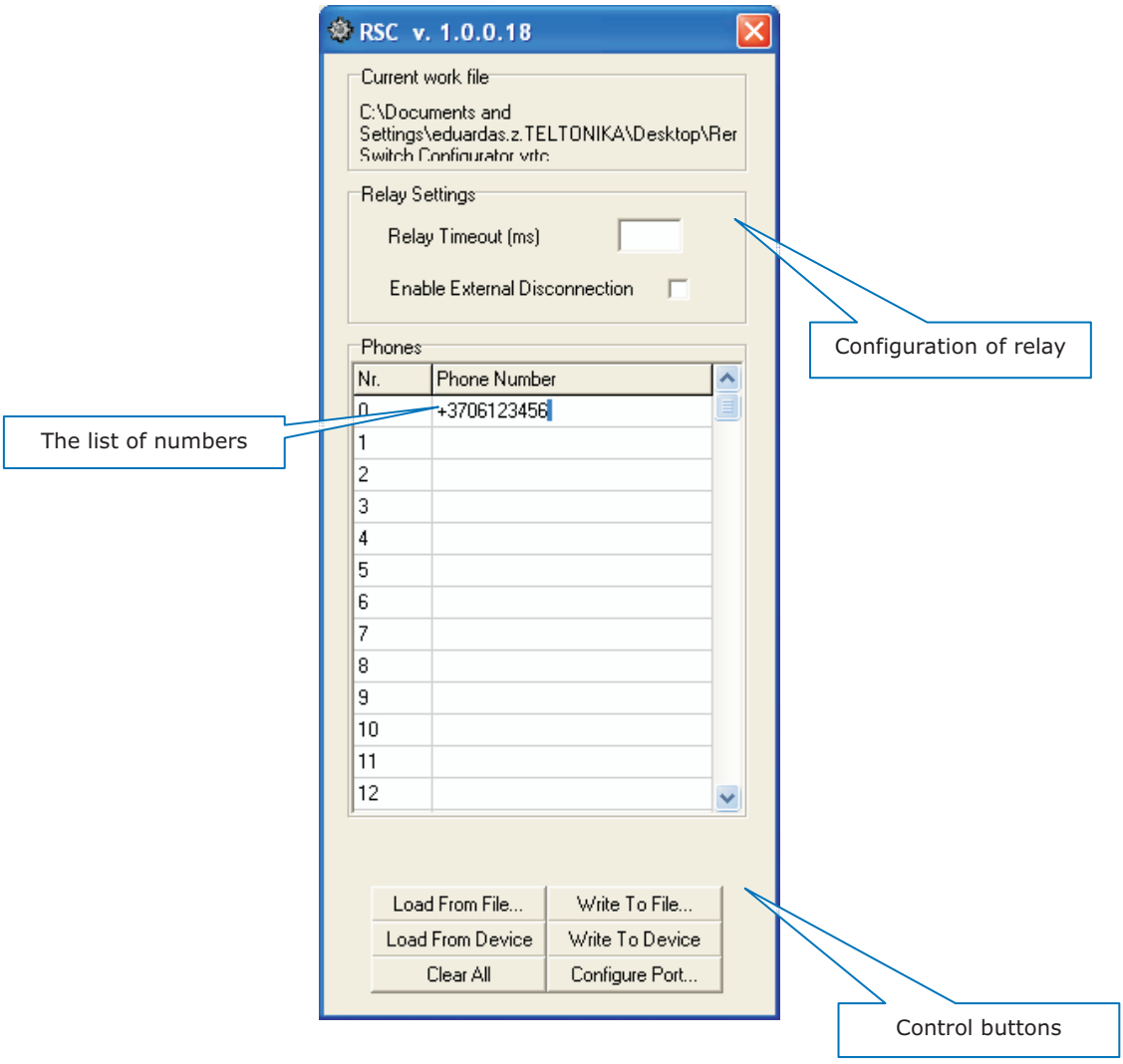
The changes take effect immediately after the reception of the SMS message.

CONFIGURATION BY MEANS OF A PERSONAL COMPUTER

In order to configure the device using a personal computer you should:

- Install *Remote Switch Configurator*
- Connect *VRT012* to a PC using a configuratin cable
- Start *Remote Switch Configurator*

In picture 4. you can see the main window of *Remote Switch Configurator*. It is divided into 3 sections



Picture 4. The main window of *Remote Switch Configurator*

Configuration of relay allows choosing a way how the device will switch from ON to OFF mode of the inner relay.

Device can switch modes automatically after a number of ms, which can be entered in Relay Timeout (ms) field.

If an e•ternal source of a signal (button or other sensor) will be required in order to switch the modes, you should place a tick at *Enable E•ternal Disconnection*.

You can add up to 500 numbers in the list of numbers.

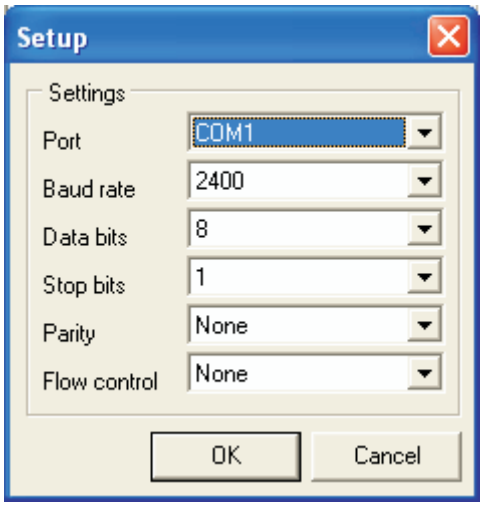
Note: you should add + sign in front of every number.

Control buttons should be used to:

- Load the configuration from file - Load From File...
- Read the configuration of the device - Load From Device
- Delete all fields - Clear All
- Save the configuration of the device to a file Write To File
- Save the configuration to device' s memory Write To Device.

Start working with *Remote Switch Configurator* by configuring port *Configure Port*.

A port configuration window is shown in picture 5. You should select a *Port* which a device *VRT012* is connected to and press *Ok*.



Picture 5. Port Configuration Window.

Note: you should restart the device after configuration is saved to its' memory. Just unplug the power source and plug it again.

METHOD OF OPERATION

For the switching-on signal to be activated (the connection of internal relay contacts), the user has to dial the device's SIM card number. After having received one or two calls, the device rejects it, if the call matches one of the numbers available in the internal data base of the device. If the number does not match, the device would not respond to calls.

The device rejects the switching-on signal either when the delay time runs out or when it receives a signal due to activation of an external button or sensor, depending on the configuration of the device.

When the device is operating, the list of numbers available in its memory may be edited by means of SMS messages.

Note: device responds SMS that come from the number which was entered at 0th position in the internal data base of numbers.

IMPORTANT

The sign on the packaging means that the user's manual provided on a compact disk must be read before using the product.

The sign on the packaging means that the electric and electronic equipment to be utilised must be stored separately.